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EXAMINER
PATEL, NIRAV G

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)	
Office Action Summary	10/596,374	GAO, QI	
	Examiner	Art Unit	
	Nirav G. Patel	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>12 November 2009</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
    closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>27-45</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>27-45</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
         application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

It would be of great assistance to the Office if all incoming papers pertaining to a

filed application carried the following items:

1. Application number (checked for accuracy, including series code and serial no.).
2. Group art unit number (copied from most recent Office communication).
3. Filing date.
4. Name of the examiner who prepared the most recent Office action.
5. Title of invention.
6. Confirmation number (See MPEP § 503).

Response to Arguments

Regarding Objections of Claims 6-7 and 19-23, the objections are withdrawn

as the claims have been cancelled.

Regarding Claims 10 and 16-18 Rejected under §112, the rejection is

withdrawn as the claims have been cancelled.

Regarding Claims 1-4, 8-11, 13-18, and 24-25 Rejected under §102, the

rejection is withdrawn as the claims have been cancelled. Furthermore, the applicants

assert that Dobashi fails to teach the limitations of the new claims. However, it is

requested that the applicants review the new rejections, as Dobashi teaches the

limitations.

Regarding Claim 5 which was Rejected under §103, the rejection is withdrawn

as the claim has been cancelled.

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2.   Claims 27, 28, 32, 33, 34 through 37, 39 through 42, and 45 are rejected under

35 U.S.C. 102(b) as being anticipated by Dobashi et al. (U.S. Pub. No.: 2001/0031072,

"Dobashi").

     1) Regarding Claim 27, Dobashi teaches a method of face recognition,

comprising the steps of: providing an active infrared light to illuminate a target face

when a user approaches an image capturing unit (Figure 35: An illumination section (342) is

used to illuminate a user's face, as the user (100) approaches the apparatus),

     wherein the active infrared light mounted around a lens of said image capturing

unit is a near infrared (NIR) light in an invisible light spectrum (Paragraph 248: Unit 342 is an

infrared illumination lamp, which is mounted around (the location in relationship to the camera) the lens

(above), in the invisible light spectrum);

     capturing a plurality of facial images from a target face illuminated by said active

NIR light, and sending a NIR facial image to a data processing unit (Figure 35: The camera

(341) captures a plurality of facial images of a target face (person, 100), which is illuminated by the NIR

light (342), and sends it to 304 (an image processing section));

localizing said face and / or eyes of said face (Figure 1: Feature value extraction section

(106) detects the positions of eyes and nose from the facial region detected), and cropping a portion

of said facial image from said NIR facial image by said data processing unit (Paragraph

96: Feature value generation section 106c cuts out the facial region at certain size and shape based on

the positions of the facial parts detected to generate a feature value);

extracting facial feature from said portion of said facial image (Figure 1: Feature

value extraction section (106) detects the positions of eyes and nose from the facial region detected);

comparing facial feature with that of previously extracted and stored in a facial

image database (Paragraph 102: The recognition section (107) collates (compares) recognition data

stored in the registration information preservation section (database, 108) with the values obtained in the

extraction section);

outputting a recognition result obtained from said comparing step (Paragraph 112:

The identification results outputs the results of the recognition comparison (Figure 7)).

2) Regarding Claim 28, Dobashi teaches in addition to the method of claim 27,

wherein a NIR filter is disposed on said image capturing unit for cutting off visible light

radiation while allowing the NIR light radiation to pass through, so as to improve NIR

face image acquisition (Paragraphs 248-249: The infrared camera is a camera having sensitivity only

in an infrared wavelength region (near-infrared, within the 700 nm to 1000 nm), which is in the rage of

infrared. Due to its sensitivity only to infrared wavelength, it filters all other wavelengths including cutting

off visible light).

3) **Regarding Claim 32**, Dobashi teaches a method for facial image acquisition, comprising the steps of:

providing a plurality of active infrared lights to illuminate a target face (Figure 35: An illumination section (342) is used to illuminate a user's face, as the user (100) approaches the apparatus), wherein said active infrared light mounted around a lens of an image capturing unit is a near infrared (NIR) light in an invisible spectrum (Paragraph 248: Unit 342 is an infrared illumination lamp, which is mounted around (the location in relationship to the camera) the lens (above), in the invisible light spectrum);

providing an image capturing unit for capturing NIR images of said target face (Figure 35: The camera (341) captures a plurality of facial images of a target face (person, 100), which is illuminated by the NIR light (342), and sends it to 104 (Figure 1, an image processing section)), and

sending / storing said NIR face images to a data processing unit used for localizing and recognizing said target face (Figure 1: Feature value extraction section (106) detects the positions of eyes and nose from the facial region detected).

4) **Regarding Claim 33**, Dobashi teaches in addition to the method of claim 32, wherein a NIR filter is disposed on said image capturing unit for cutting off visible light radiation while allowing the NIR light radiation to pass through, so as to improve NIR face image acquisition (Paragraphs 248-249: The infrared camera is a camera having sensitivity only in an infrared wavelength region (near-infrared, within the 700 nm to 1000 nm), which is in the rage of infrared. Due to its sensitivity only to infrared wavelength, it filters all other wavelengths including cutting off visible light).

5) **Regarding Claim 34**, Dobashi teaches in addition to an facial image acquisition apparatus used for realizing the method of claim 32, comprising an active

infrared light and an image capturing unit (Figure 35: Unit 342 is an active infrared light (NIR) and

341 is an image capture unit), wherein said image capturing unit includes a lens (Paragraph

323: The lens (311) of the camera (301) allows for acquiring images); and

said active infrared light used for illuminating a target face comprises a plurality

of active NIR lights mounted around said lens (Paragraph 248: Unit 342 is an infrared

illumination lamp, which is mounted around (the location in relationship to the camera) the lens (above),

in the invisible light spectrum); and

said image capturing unit sends at least one facial image to a data processing

unit (Paragraph 247: Figure 35 is a facial image recognition apparatus, which acquires images of a face

and uses an image processing section (data processing unit) to recognize faces from images which are

acquired by the camera).

6) **Regarding Claim 35**, Dobashi teaches in addition to the apparatus of claim

34, wherein said active NIR lights comprises a plurality of constant NIR light sources, or

a plurality of flash NIR light sources, or the combination thereof (Figure 35: Unit 342 is a

constant NIR light source).

7) **Regarding Claim 36**, Dobashi teaches in addition to the apparatus of claim

34, wherein the direction of said active NIR lights is parallel to an axis of said lens (Figure

35: The rays from the NIR light source (342) are parallel to an axis of the lens).

8) **Regarding Claim 37**, Dobashi teaches in addition to the apparatus of claim

34, wherein said image capturing unit includes an NIR optical filter of band-wavelength-

pass or long-wavelength-pass type, and it is used to suppress visible lights while

allowing NIR lights to pass through so as to achieve better NIR imaging effect

(Paragraphs 248-249: The infrared camera is a camera having sensitivity only in an infrared wavelength

region (near-infrared, within the 700 nm to 1000 nm), which is in the rage of infrared. Due to its sensitivity

only to infrared wavelength, it filters all other wavelengths including cutting off visible light).

9) Regarding Claim 39, Dobashi teaches an facial image recognition apparatus

used for realizing the method of claim 27, comprising an active infrared light and an

image capturing unit (Figure 35: Unit 342 is an active infrared light (NIR) and 341 is an image capture

unit), and a data processing unit (Figure 35: The camera (341) captures a plurality of facial images

of a target face (person, 100), which is illuminated by the NIR light (342), and sends it to 304 (an image

processing section));

wherein said image capturing unit includes a lens (Paragraph 323: The lens (311) of

the camera (301) allows for acquiring images); and

said active infrared light comprises a plurality of active NIR lights used for

illuminating a target face and mounted around said lens (Paragraph 248: Unit 342 is an

infrared illumination lamp, which is mounted around (the location in relationship to the camera) the lens

(above), in the invisible light spectrum);

said image capturing unit is used for capturing facial images and sending at least

one facial image to said data processing unit (Paragraph 247: Figure 35 is a facial image

recognition apparatus, which acquires images of a face and uses an image processing section (data

processing unit) to recognize faces from images which are acquired by the camera);

said data processing unit comprises a PC or an embedded processor in which

image processing software is installed, used for receiving images from said image

capturing unit and localizing eyes and face in said facial images (Paragraphs 93-95: The

feature extraction section 106 is explained, where 106b detects positions of eyes and a nose from part of

the facial region detected (thus localizing the eyes and face)), and extracting facial features in said

localized facial area (Figure 1: The feature value extract section (106) extracts features from the facial

image), and comparing the extracted features with that of previously stored in a facial

image database (Figure 1: Unit 108 is the registration information preservation section (database)

which is used to compare (in section 107) the data from section 106, which extracts the features

(Paragraph 142)).

      10) Regarding Claim 40, Dobashi teaches in addition to the apparatus of claim

39, wherein said active NIR light comprises a plurality of constant NIR lights, or a

plurality of flash NIR lights, or the combination thereof (Figure 35: Unit 342 is a constant NIR

light source).

      11) Regarding Claim 41, Dobashi teaches in addition to the apparatus of claim

39, wherein the direction of said active NIR light is parallel to axis of said lens (Figure 35:

The rays from the NIR light source (342) are parallel to an axis of the lens).

      12) Regarding Claim 42, Dobashi teaches in addition to the apparatus of claim

39, wherein said image capturing unit includes an NIR optical filter of band-wavelength-

pass or long-wavelength-pass type, and it is used to suppress visible lights while

allowing NIR lights to pass through so as to achieve better NIR imaging effect

(Paragraphs 248-249: The infrared camera is a camera having sensitivity only in an infrared wavelength

region (near-infrared, within the 700 nm to 1000 nm), which is in the rage of infrared. Due to its sensitivity

only to infrared wavelength, it filters all other wavelengths including cutting off visible light).

      13) Regarding Claim 45, Dobashi teaches in addition to the apparatus of claim

39, wherein said active NIR light can be controlled by a power switch, a proximity

sensor switch or an RFID controlled switch (Paragraph 87: The infrared sensor detects the

approach (proximity of a human being which is a switch to turn on the illumination source).

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 29 and 43 rejected under 35 U.S.C. 103(a) as being unpatentable over

Dobashi in view of Vertegaal et al. (U.S. Pub. No.: 2005/0175218, "Vertegaal").

        1) Regarding Claim 29, while Dobashi teaches the limitations of claim 27, he

fails to teach the limitations of claim 29.

        However, in the same field of endeavor, Vertegaal teaches detecting specular

highlight reflections in eyes in said NIR face image to localize eye positions and thereby

localize said face (Claim 1: Eye tracking is achieved by producing glints or reflections in the subject's

eyes and then analyzing the image to find the glint and center of the eye and then determining the

position of the eye (eye gaze)).

        Determining the location of the eyes using specular highlights (reflections) allow

for a way of efficiently determining eye location and point of gaze which can improve

identification of facial features, which Dobashi uses, thus allowing for accurate results.

        Therefore it would have been obvious to one of ordinary skill in the art at the time

of the invention to apply the teachings of Vertegaal to Dobashi.

        2) Regarding Claim 43, while Dobashi teaches the limitations of claim 39, he

fails to teach the limitations of claim 43.

However, in the same field of endeavor, Vertegaal teaches wherein said data processing unit includes a means for detecting specular highlight reflection in each eyes in said NIR face image, it is used for localizing said eyes and face through localizing the positions of a highlight spots (Claim 1: Eye tracking is achieved by producing glints or reflections in the subject's eyes and then analyzing the image to find the glint (highlight spots) and center of the eye and then determining the position of the eye (eye gaze)).

Determining the location of the eyes using specular highlights (reflections) allow for a way of efficiently determining eye location and point of gaze which can improve identification of facial features, which Dobashi uses, thus allowing for accurate results.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Vertegaal to Dobashi.

5.   Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dobashi in view of Hay et al. (U.S. Pat. No.: 6,419,638, "Hay").

        1) Regarding Claim 30, while Dobashi teaches the limitations of claim 27, he fails to teach the limitations of claim 30

        However, in the same field, Hay teaches judging whether eyes and/or face is successfully localized after sending at least one facial image to a data processing unit; if yes, going forward to the next step of cropping a portion of said facial image, otherwise repeating the localizing step until eyes and/or face is successfully localized (Figure 1: The raw image file (22) is input (into a data processing unit) and is processed to find (localize) eye (39) and then when they are, the image is cropped, if not, the step is repeated (decision 42) until the eyes are located).

Ensuring that the eyes are located in acquired image and then continuing processing ensures that there is sufficient data to provide recognition of a user, as if features, such as the eyes, are not present, proceeding with the process would not result in identification, thus wasting time and system resources. Applying Hay's teachings would allow for the system to be efficient, by avoiding the problems discussed.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Hay to Dobashi.

6.   Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dobashi in view of Lee et al. (U.S. Pub. No.: 2003/0058111, "Lee").

1) Regarding Claim 31, while Dobashi teaches the limitations of claim 27, he fails to teach the limitations of claim 31.

However, in the same field of endeavor, Lee teaches wherein said image capturing unit can track the movement of target face illuminated by said active NIR light (Abstract: A person of interest in a scene (area illuminated by active light, within the field of an image capturing unit) can track a person of interest).

Having an option to track an individual illuminated by active NIR light allows for Dobashi a way to track the identified user who is given pass, so that it can be ensured that the user only proceeds to where they are authorized, allowing for more secure access.

Therefore it would have been obvious to one of ordinary skill in the art at the time
of the invention to apply the teachings of Lee to Dobashi.

7.   Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dobashi
in view of Kansakoski et al. (U.S. Pub. No.: 2003/0047135, "Kansakoski").

        1) Regarding Claim 38, while Dobashi teaches the limitations of claim 37, he
fails to teach the limitations of claim 38.

        However, in the same field of endeavor, Kansakoski teaches wherein said NIR
optical filter is an NIR optical coating or an NIR optical glass disposed on the surface or
inside of said lens (Claim 23: The apparatus has disc-like chopper which has NIR filters (coating)
which allows IR radiation to pass).

        Allowing for the NIR light to pass to the camera by using Kansakoski teachings
with Dobashi's allows for filtering out other wavelengths of light which interfere with the
acquiring device resulting in a degraded image, which gives rise to less accurate
determination of individuals being processed.

        Therefore it would have been obvious to one of ordinary skill in the art at the time
of the invention to apply the teachings of Kansakoski to Dobashi.

8.   Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dobashi
in view of Hoffberg (U.S. Pub. No.: 2007/0053513).

        1) Regarding Claim 44, Dobashi teaches in addition to the apparatus of claim
39, wherein there is a displaying device for displaying facial images, used for adjusting

the position of the target face in vertical and horizontal directions (Paragraphs 133-134: A display device (110) is used to adjust the position of the target face, which is done so using a speaker to provide voice guidance);

said displaying device is a mirror or a display, mounted in such a way that its surface normal is co-axis to said lens (Figure 11: Unit 110 is a display section used to display the image acquired by the capturing unit, which is mounted opposite of the camera (coaxial to the lens)).

Dobashi fails to teach that the display device is LCD (liquid crystal display).

However, in the same field of endeavor, Hoffberg teaches that a LCD is used in the interface, which uses user identification (Figures 17 & 22) (Paragraph 1478).

Since Dobashi teaches using a display device for displaying the images but does not explicitly state using a LCD device, using the teachings from Hoffberg, which does suggest using a LCD in an interface that uses user identification allows for using a device (LCD) which is space saving and light weight, as compared to convention CRT monitors, thus allowing for a compact system which can allow for more components to be place due to the space saved. LCDs also provide better picture quality than compared to CRTs, which also improves the quality of the identification in Dobashi's teachings.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Hoffberg to Dobashi.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nirav G. Patel whose telephone number is (571)270-5812. The examiner can normally be reached on Monday - Friday 8 am - 5 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nirav G. Patel/
Examiner, Art Unit 2624

/CHARLES KIM/
Primary Examiner, Art Unit 2624